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Some of the dimensions of the relative financial contribution of the cooperating parties in manpower institutional training as established under the Manpower Development and Training Act of 1962 were explored. This analysis will provide some perspective to those who must finally decide the question of relative financial contribution, or provide them with a certain range of the cost dimensions of the program. Discussed in this document are: (1) some cost dimensions of manpower training, (2) total cost of the manpower development program, (3) space, equipment, program planning and on-the-job institutional training, (4) indirect cost, (5) cost requirement, (6) individual educational return, (7) the training gap, (8) cost effectiveness, (9) MDTA as a bridge between industry and education, (10) new occupations, (11) public relations and community liason, (12) MDTA contribution to local training effort, (13) the Keene, New Hampshire project, (14) educational innovation, (15) some problems. It was recommended that an integrated decision-making system in the occupational training area be developed to insure that the total occupational training effort of the Federal Government achieves the worthy goal of training all individuals to their full capacity. (MM) -

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MANPOWER TRAINING SOME COST DIMENSIONS

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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CONTENTS

MANPOWER TRAINING — SOME COST DIMENSIONS 7

Total Cost of the Manpower Development Program 8

Space, Equipment, Program Planning, and OJT Institutional Training 8

Indirect Costs 14

Cost Requirement 19

Individual Educational Return 21

The Training Gap 25

Cost Effectiveness 26

MDTA as a Bridge Between Industry and Education 29

New Occupations 33

Public Relations and Community Liaison 35

MDTA Contribution to Local Training Effort 36

The Keene, New Hampshire, Project 39

Educational Innovation 42

Some Problems 45

FOREWORD

It has long been recognized that one of the dimensions of a viable society in the calculable future is an active manpower policy. Indeed, as our economy achieves higher and higher levels of performance, the more clearly exposed does the hard-core unemployed become. While there is little dispute that high aggregate demand is necessary for the solution of unemployment and poverty, it is not clear that such aggregate demand is sufficient. Many economists are concerned that a stubborn unemployment problem remains. They are further disturbed that in the years to come, assuming relatively similar conditions as we now enjoy, there may be increasing numbers of low skilled, poorly educated persons ill qualified to undertake jobs that our society will need to fill

It was no doubt toward this end that the Federal government finally began to develop a manpower policy in the early 1960's. This was a new experience for us and in the process there have been some false starts, some errors of omission, some errors of commission. Nevertheless, it is evident that we are now committed to making a serious and conscious investment in human beings.

The manpower training program obviously incurs costs, not only of a direct nature, but a whole series of indirect costs as well. Judgment on any program of this nature does involve the entire burden of the foregoing, which when set against the objectives that a society seeks, may provide a base for evaluation. Such an approach obviously involves some weighing of the objectives, some determination of the benefits involved.

The technique implied by these statements is a relatively new one, stemming in large part from the recent costing methods utilized in the Department of Defense and from analyses in the area of water pollution. Some practitioners are dubious that it is possible to make statements about effectiveness or benefits in such areas as education or manpower training. Others, notably Professor Theodore Schulz of the University of Chicago, have suggested a way of arriving at quantified estimates of the value of an education.

Professor Stanley Young, of the School of Business Administration, for some time now has been concerned with this problem. In this study, prepared for the U. S. Office of Education, he attempts to establish criteria for measuring the cost effectiveness of a manpower program. It represents an exploratory effort of no small significance. The Labor Relations and Research Center of the University of Massachusetts is happy to sponsor its publication, for it does make an important contribution to knowledge in an area that is as yet in its infancy.

BEN B. SELIGMAN, Director
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MANPOWER TRAINING – SOME COST DIMENSIONS

Manpower institutional training, as established under the Manpower Development and Training Act of 1962, as amended, is a cooperative undertaking between the Federal, state, and local governments and both profit and nonprofit organizations. The success of this program, in large measure, can be attributed to the ability of these diverse units to work effectively together. Congressional endorsement and continuation of the program is a recognition of this fact.

However, as in any cooperative undertaking, there is a continuing concern as to the relative contribution of each of the agencies to the success of the program. Congress quite legitimately is concerned with the various cost aspects of the program and particularly the Federal financial contribution, as are the state and local officials. While no final answer can be derived as to the appropriate contribution of the cooperating parties, this report will explore various dimensions of this problem. Specifically reviewed will be: 1) components of the relative financial contribution of the parties, and 2) certain contributions that are significant to the program's effectiveness, but which are too intangible to reduce to specific costs.

The primary thrust of this analysis is to explore some, but not all, of the dimensions of the relative financial contribution of the parties. A cost analysis of a program such as Manpower Development is a multidimensional or multivariable undertaking. There is always a possibility that one might concentrate on only one dimension of the cost of the program such as its direct costs and ignore the overhead costs, or the benefit. The return in terms of each training dollar invested might be forgotten, and so forth. This analysis, hopefully, will provide some perspective to those who must finally decide the question of relative financial contribution or provide them with a certain range of the cost dimensions of the program, in order to facilitate the development of proper decisions and/or policies as to Manpower Development.

In reviewing the financial contribution or cost burden of manpower institutional training, at the outset, one might place this contribution in the broadest possible context. Given the national objective that each child and/or individual should be trained to the limit of his ability, the Manpower Development and Training Program represents one of many educational programs directed toward the achievement of this objective. Viewed from this broad perspective, institutional manpower costs have several dimensions which will be explored in this report: 1) the particular contribution of Federal government, state gov-

ernment, and private industry to the total cost of MDTA (the institutional segment); 2) the cost of MDTA as part of the total cost burden of occupational training; 3) cost versus training requirements; 4) training return per tax dollar contributed; 5) cost-effectiveness; and 6) cost reciprocity.

TOTAL COST OF THE MANPOWER DEVELOPMENT PROGRAM

The total cost of the Manpower Development Program is made up of 1) direct and 2) indirect educational costs. Although no rigid distinction can be drawn between these two costs, in general, direct costs relate to the immediate and direct outlay necessary to conduct training programs, (such as the costs of training material, instruction, trainee compensation, etc.) Indirect costs, as used in this analysis, relate to those costs (generally of a long-run nature) incurred to provide an existing base or capability to carry on effective training. And here one would be concerned with such items as teacher training, administrative costs and "know-how."

There is little question that in terms of direct costs the Federal government has assumed the major, but not the complete burden of the Manpower Development Program. The Federal government pays for such items as instructional salaries, supplies, rental of instructional equipment, and so on. However, there are three or four direct-cost items so categorized in the MDTA Program which, in the main, are provided for by the state and/or local community. These will be briefly reviewed and their significance noted.

SPACE, EQUIPMENT, PROGRAM PLANNING, AND OJT INSTITUTIONAL TRAINING

One item of expense that is contributed by the state and local communities is space or facilities rent-free. Whereas training can be conducted in private facilities, such training programs represent a very small part of the total number of programs conducted. Although no statistical effort was made to determine the number of training programs conducted in private versus public facilities, a reasonable estimate is that 90% are conducted in public facilities. In metropolitan areas, to rent facilities without utilities (heat, lights, etc.) conservatively averages approximately $1.50 per square foot per year. A rough guide that vocational education administrators and MDTA officials use to estimate space requirements for students is 150 sq. ft. per student. This, of course, will vary in terms of the type of program. To train automobile mechanics may average 200 sq. ft. per

student, while training typists may average 100 sq. ft. But in the construction of vocational education facilities, 150 sq. ft. per student seems to be a standard guide.

The average length of courses in 1964 was 36 weeks,[1] or about 70% of a full year. The rental cost per student per year would be $225.00 per trainee, or:

Amount of space required per trainee	150 sq. ft.
Estimated rent per sq. ft. per year	$1.50
Rental cost per student per year	$225.00

But the average length, of course, is 70% of a year; thus, the estimated rental cost per student would be $157.50, or 70% x 225 = $157.50. In 1964 there were 171,635 institutional trainees and 30,140 experimental and demonstration trainees[2] or an approximate total of 201,000 trainees. (This excludes on-the-job trainees.) Assuming all were trained in public facilities, the total rental costs would have been approximately $31,400,000. Further assuming that only 90% of the projects were conducted in public facilities, the rental costs would have been $28,360,000. As a percentage of the direct total institutional costs, which amounted to $78,455,000 in 1964, which were incurred by the Department of Health, Education and Welfare for institutional training,[3] state and local community contributions in the form of free rental facilities, amounted to 36% of the Federal contribution.

Even though the figures that have been presented have been gross approximations, it is apparent that by offering rent-free facilities, both state and local communities are making a significant financial contribution to the MDTA program. In addition to public educational facilities that have been provided rent-free, there have been instances in which other local and state facilities have been furnished rent-free. For example, in Norwich, Connecticut, state hospital facilities have been converted to an MDTA training center, for which the state does not charge.

A second major cost item that is contributed by states and local communities relates to training equipment: such as lathes, grinders, typewriters, etc. The Federal government is making a significant contribution in the purchase of new training equipment, which is estimated to represent approximately 28% of every training dollar.[4] Assuming

[1] *Education and Training*, Department of Education, April, 1965, p. 24.
[2] Table 1, *Education and Training, op. cit.*, p. 51.
[3] Table 9, *Education and Training, op. cit.*, p. 26.
[4] Figure 9, *Education and Training, op. cit.*, p. 26.

training costs per trainee fall between $500 and $600,[1] equipment purchased averaged between $140 and $190 per trainee. However, in these instances in which training equipment is available in public facilities and there is no demonstrated need for additional equipment, MDTA trainees receive the use of such equipment rent-free. It is extremely difficult to arrive at any reasonable figure as to what this cost contribution by state and local communities would be. When requests for training are drawn up as to equipment requirements, they may range from no equipment requested, in which case the state and local community would supply all of the equipment; to requests in which the Federal government would provide all of the training equipment. No data is available which furnishes a precise breakdown of training projects in terms of which governmental units supplied what pieces of training equipment and their costs. A rough guide, however, would be in those training projects that are similar to those currently being conducted in vocational facilities, one can assume the state and local community have made a significant contribution. In those instances in which "new" occupations have been inaugurated which do not exist in local facilities, the Federal government has had to purchase most of the equipment. Using this guide, leading occupations (those MDTA occupations with the greatest number of trainees) are found in existing facilities: such as clerk-typist, machinist (machine tool operator), automobile mechanic, welder, stenographer, etc.[2] These would use existing equipment. It is also a characteristic of these occupations that training equipment costs are relatively large. In other words, occupations such as machinist which are carried on in vocational public schools require expensive equipment; whereas nurse aide orderly, which usually is not part of the curriculum of a public vocational school, has low equipment requirements.

A rough reflection of the relative contribution of Federal versus local contribution can be obtained by reviewing each project. Each request not only has to state new equipment needed, but also the existing equipment that is available for training. Without listing specific projects or equipment needs, a review of New England projects reveals that local facilities tended to contribute as much equipment as they requested. If one considers the occupation that requires the costliest equipment for training, machinist general operator, Massachusetts state educational officials estimate that it would require a minimum of $200,000 worth of equipment to provide a course. A review of MDTA requests for this occupation in New England revealed that equipment costs would rarely exceed $20,000. Further, in the

[1] *Education and Training, op. cit.*, pp. 25-26.
[2] See Table 6, *Education and Training, op. cit.*, p. 15.

New England machine tool manufacturing centers such as Worcester and Springfield, Massachusetts, state officials observed that in certain vocational education installations, there are as much as two to three million dollars worth of tools. While exceptional. certainly the Federal government has not begun to duplicate this type of facility. Another indication of state contribution was revealed in the case of Connecticut, where no requests for new equipment were made in the first year or 18 months of MDTA's operation. The state supplied all the equipment needs during this period. Thus, a fair approximation would be that state and local communities have contributed as much in the purchase of training equipment as the Federal government. Assuming 28¢ of the training costs are devoted to the purchase of new equipment, out of a Federal training dollar, we can further assume that state and local communities contributed an additional 28¢. (No attempt is made here to ascertain the equipment cost per trainee over the life of the equipment, because one would have to amortize the cost of the equipment over its life and then in terms of the number of trainees per year per piece of equipment.) Thus, state and local equipment contribution in 1964 represented approximately 28% of the instructional costs of the Federal contribution, or approximately $23,000,000 (28% of $78,000,000). Moreover, in considering current expenditures for training equipment, one must keep in mind that such equipment has to be amortized over many training projects; and although the initial costs may be high in the first years of the MDTA program, these costs should decline as schools tool up.

An example of this phenomenon is found in the case of the Westfield Trade School in Western Massachusetts. MDTA has sponsored three training projects for general turret lathe operators in this trade school. The first training project (1963-1964) for 32 trainees cost $71,995, or an average cost per trainee of $2,250. Part of this project included significant equipment purchase. The second project (1964-1965) for 32 trainees for the same occupation cost $41,955 or an average per trainee of $1,300, which also included a lesser equipment purchase. The current project MA (R) 6004 for 32 trainees for the same occupation cost $24,071, or an average cost per trainee of $750. There were no equipment requests in this third project. Hence, the cost of training the same number of trainees in the same occupation dropped two-thirds, or from $71,995 to $24,071, from the first to the third project. This reduction can be attributed entirely to the fact that the first project was used to tool up the shop and must be viewed as a development rather than an operating cost. Therefore, in the initial years of MDTA training, the average training costs per trainee may be deceptive. In the absence of new occupations that will require

initial tooling, the equipment element of MDTA costs should gradually go down, and in turn, the average cost of training.

Another item of direct cost that is borne by state, local community, or private industry relates to the administrative time involved in preparing a project for MDTA approval. The New England regional office, after a careful study of a number of projects, concluded that it costs approximately $250 to prepare a project in terms of the professional and clerical time expended. Such work by specialists in the occupational field involves curriculum design, equipment requirements, cost estimates, and consultation with state and Federal officials. Thus, for example, in 1964 there were a total of 2,625 institutional training projects (institutional and E & D, but not on-the-job). The total cost of planning these was approximately $756,750, or about 1% of the total training costs.

Another direct cost borne by the state and local communities is the institutional related training associated with on-the-job projects. In the majority of instances, on-the-job apprenticeship training requires supplemental institutional training, frequently of short duration (10 to 12 weeks) and of a basic nature. It may involve, depending on the occupation, instruction in such items as blueprint reading, elementary mathematics, etc. A sampled review of OJT projects revealed that such training is frequently provided under the established local adult education program at no cost to the Federal government. For example, in New Britain, Connecticut, two apprenticeship on-the-job training programs for machinists provided that "supplemental related training will be made available in the evenings in a Connecticut Vocational Technical School at no charge to this project." In such instances, the local school provides equipment, books, materials and charts. State educational officials estimate such pre-apprenticeship related and supplemental training may involve, depending on the program and the number of trainees, between $5,000 to $10,000 per project. Or, in those instances in which similar institutional training has been part of a normal MDTA institutional training project, or is occupational training, non-apprenticeship in nature, the costs of such programs paid for by the Federal government have been from $5,000 to $10,000. It is impossible to estimate the cost of such training; however, if this becomes an extensive practice of OJT, the cost to the local community could be quite significant. Since the majority of apprenticeship programs have such requirements, and since there were for example 1,160 OJT projects in 1964, if only 25% of such projects were provided with free related training at $5,000 per project, the total cost would be approximately $1,145,000 or 2% of the total Federal MDTA

institutional training costs for that year. A preliminary review of such projects in the New England region revealed a much higher proportion than 25% with related free training.

In summary, if one ignores the indirect educational cost contribution and other contributions being made by state, local and private industry to the success of MDTA training effort, and concentrates only on direct outlay, an analysis of the total direct costs of institutional MDTA programs reveals that state and local communities (using 1964 as a standard year) are contributing as follows:

	Cost (Millions)	% of total Institution Federal Cost ($78 million)
Rent free facilities	$28,360	36%
Free Equipment	23,240	28%
Free Planning	756	1%
Free OJT training	1,450	2%
Total	$53,806	67%

In comparison to the direct Federal contribution, for 1964, of approximately $78 million, the state and local contribution amounted to more than $53 million or 67% of the Federal outlay. If the direct costs to Federal, state and local communities are combined, total direct costs of manpower training would have totaled about $131 million in 1964. The relative contribution of state and local governments would represent about 40% of this total; for the Federal government, 60%.

If Congress follows through with its intent of requiring states to provide matching funds for MDTA institutional training (See Section 231, Part B, Manpower Development and Training Act of 1962 as Amended [42 U.S.C.-2571-2620]) and if such state contribution can be provided in the form of services and/or kind, the above analysis suggests that state and local communities have as a matter of fact been contributing more than one third of the direct costs of the program. Of course, the foregoing analysis is only indicative — to stress the fact that states and local communities have been contributing directly to the cost of the program. To ascertain the actual outlay, a detailed analysis of each project would be necessary to determine the actual square feet, machine usage, etc.

In addition to the direct contribution by state and local public communities, the direct contribution of private industry to public vocational facilities, although of a lesser magnitude, should also be noted. MDTA training projects are conducted in public vocational facilities which typically occur after day school hours, in the later afternoon or eve-

ning. Equipment and instructional material used by regular vocational day classes are available. A traditional practice has existed in vocational education for private industry either to contribute equipment and instructional material outright without cost to vocational schools, or at a reduced price. MDTA trainees, as do all vocational education students, benefit from this contribution. Some examples of such private effort follow.

Automobile companies, particularly, Chrysler, General Motors, and Ford, have donated automotive equipment, such as motors and transmissions, to schools for their automotive mechanic classes—an occupation in which a significant number of MDTA students have trained. Machine tool companies such as Brown Sharp Manufacturing of Rhode Island, Cincinnati Milling of Ohio, and South Bend Lathe of Indiana have for many years sold machine tools to vocational schools at a reduced price. In one New England MDTA project, Brown Sharp sold a $13,000 milling machine for $7,500.

Another example is the leather industry of New England, which has contributed leather (as teaching materials) in the training of shoe occupations. MDTA training projects in boot and shoe occupations in Lynn, Massachusetts and Lewiston, Maine have benefited from these contributions.

In addition, private companies have prepared special instructional materials in the form of films, mock-ups, blueprints, slides, and special booklets, all of which have been made available to trainees. Certainly not an unusual example was MDTA project C N (5001) Bridgeport, Connecticut, automotive mechanic, in which as part of the curriculum, films such as "The Tread Tells the Tale" by Chrysler, "Brake Adjustment" by Raybestos, and "Good Steering" by Ford, were shown to the trainees. Apart from the fact that no cost is involved either in the rental or the purchase of such instructional materials, in these occupations with highly specialized equipment and tools, such materials are essential if training is to occur. The only source of such information is private industry. Again, it is impossible to attach any meaningful cost figure to the direct contribution of private industry to the MDTA program. However, given the long historical practice of private industry's support of vocational education, over the years a training capability has been built up, which was available for MDTA trainees.

INDIRECT COSTS

In considering the total cost of the institutional Manpower Training Program, one has to consider not only direct cost outlay for such items

as teacher salaries, but the indirect costs. As noted earlier, indirect vocational education costs are those that have to be incurred, to provide a base or capability to conduct training, such as teacher, counselor, and administrative training and technical capability (know-how). These costs tend to be fixed in the short run and do not vary with the number of training projects. It should be recalled that the Manpower Training Program is being executed for the most part in state and local communities' vocational education facilities. In fact, the legislation specifically provides that this be done. Section 231 of the Manpower Development and Training Act of 1962 as amended provides in part, that "The Secretary of Health, Education, and Welfare shall, pursuant to the provisions of this title, enter into agreements with states under which the appropriate state vocational education agencies will undertake to provide training to equip persons . . . for occupations specified in referrals . . ." Thus, prior to the Manpower Training Program, there existed a vocational education establishment and capability, consisting of trained teachers, counselors, administrators, buildings, and equipment. What, in fact, occurred is that the Federal government attached the manpower program to this establishment, using it at those times during the day when regular day and evening classes were not being conducted. The Federal government has paid part of the direct costs for the manpower programs (rent and equipment as noted, being the major exceptions). However, there has been no Federal contribution to states to compensate for the erection of such a vocational establishment in the form of trained staff or administrative and technical know-how. As shall be subsequently explored more fully, the success of the manpower program (producing effectively trained individuals) is in large measure the result of having an existing vocational training establishment on the state level. Manpower projects are currently being executed by trained vocational teachers who, in addition to their regular school duties, are teaching manpower trainees after school hours. This is equally true of administrators and counselors in manpower programs. This highly trained professional staff are providing considerable know-how in the training of manpower trainees not only in the form of direct teaching, but in the establishment of programs (curriculm design, purchase of equipment, educational methodology and measurement) and in serving as an appropriate liaison with industry. All these activities insure an effective program. In order to achieve this end result, professional staff has to be trained, considerable experience has to be gained, and experimentation conducted to develop feasible and effective training programs. These development features have incurred costs on the part of states and local communities. The magnitude of these overhead costs could be compre-

hended if one assumed there existed no vocational education establishment, and the Federal government was faced with the problem of starting anew and had to train vocational teachers and administrators, and experiment with vocational programs to ascertain their effectiveness. In the United States' AID program to underdeveloped countries, the Federal government has become involved in undertakings in which, prior to the establishment of vocational education programs, it has been necessary to build teachers colleges, and train university personnel, who will, in turn, train vocational teachers. Only at this point, with the building of vocational education facilities, is it possible to start occupational training.

The existence of indirect vocational education costs has been recognized in the Vocational Educational Act of 1963 which provides funds for, in addition to the construction of new facilities (which has been treated as a direct cost in this analysis) training and supervision of teachers, development of instructional materials, evaluation of programs, and research and development of new programs and methods.[1] And while it is too early to ascertain how funds appropriated under varied vocational education legislation will be allocated, a certain amount will be apportioned to train teachers, develop new programs, methods, etc.

The panel of consultants on vocational education appointed at the request of President Kennedy in 1961 recommended "strengthening of many services which make instructional programs more effective—including teacher education, occupational information and vocational guidance, and evaluation and research." The panel also recognized that indirect costs have to be incurred to make instructional services more effective.

We might look at some of these indirect costs in more detail. Concerning the training of vocational education teachers of the MDTA program, it is difficult to estimate the extent of state funds that have been expended. The requirements to qualify for a state certificate to teach vocational subjects varies from state to state. However, in Massachusetts, it costs the state approximately $500 per year to educate one college student. Because vocational teachers must have at least one year of post-high-school formal training (which may be acquired during summer school, night school, etc.) and there are approximately 100,000 such teachers, an initial investment of 100,000 times $500 or $50,000,000 has been made in teacher training.

[1]See *Manpower Report of the President*, March 1965, pp. 105-109.

Further, a variety of in-service training programs are provided for vocational teachers which would add to this cost.

MDTA programs also provide for the use of guidance counselors, particularly in the multi-occupational programs in which the student acquires basic English and mathematical skills. Intensive counseling is required during the course of the training program. Such counseling, in addition to its occupational aspects, involves personal psychological guidance. Typically, trained counselors, who work full-time for school systems, are hired part-time under the MDTA program. To qualify as a trained counselor in the majority of school systems, one must be a college graduate. Some school systems also insist on a Master's degree, with a heavy emphasis on psychology. Again, the Federal government has recognized an indirect cost here and is assisting in the training of counselors through NDEA Fellowship Programs. And as in the instance of training vocational teachers, at least in the past, the major burden of providing higher education facilities to train counselors has been on the states and local communities.

Perhaps the most significant indirect cost can be categorized under the general classification of educational technology that inheres in the vocational education establishment. While it has been recognized that vocational education has certain limitations which all governmental agencies—Federal, state and local—are endeavoring to correct, at the same time it must also be realized that in the long history of vocational education in this country, a considerable amount of know-how has developed on the part of local instructors, schools, school boards, and on the state level in terms of how to effectively train a student vocationally. Again, this cost has been recognized by the Federal government in the Vocational Act of 1963. The President's Manpower Report noted that this act provided that "10 per cent of the funds appropriated for permanent programs must be used for research and training programs and for experimental and demonstration projects designed to meet the special vocational needs of youth . . . Through this path-finding provision for research, the Congress has pointed the way to improvement in the quality of vocational education and the development of new and more flexible programs to meet the needs of all individuals who depend on vocational education for their formal job training."[1] By 1966 the Federal government will be devoting approximately $23.5 million per year to improve vocational education or the educational technology of vocational education.

[1]*Manpower Report of the President*, 1965, *op. cit.*, p. 105.

No data was collected as to formal research and experimental programs now or formerly conducted by state and local communities. Nor was the attempt made to estimate the amount of local funds now or previously invested in research and development of vocational education projects. However, given the relatively long history of vocational education, there is little doubt that considerable informal experimental work has been carried on in the classroom, school system and on the state level. On the classroom level, the report, *Education and Training,* noted this type of innovation, when it reported that "In Hayward, California, for example, a teacher developed a laboratory for taking dictation in a shorthand course. This project involved a multiple control panel with headset equipped stations built by the teacher almost entirely out of surplus material."[1] On the state level, Connecticut has long had a system of state regional vocational schools, prior to their recent endorsement by the Federal government in the Vocational Act of 1963. Development of technical know-how, whether one is considering an educational or weapons program, is costly. As the Federal government proceeds to move into new educational programs, particularly under the Economic Opportunity Act, and as it tries to ascertain the best solutions to the problems of dropouts, functional illiterates, underachievers, and the culturally deprived; considerable expenditures may be necessary before an effective technology develops. In terms of vocational education, although experimentation will continue, a major segment of the developmental costs have already been incurred by states and local communities in the historical development of the vocational education establishment. There is full awareness of this on the Federal level, as noted in the Education and Training Report: "The vocational educators have brought a rich experience to the manpower program. This has been recognized from the beginning of manpower training as they are, and must continue to be, involved in the program."[2]

In considering, then, the total cost of manpower training under MDTA, what proportion shall be attributed to indirect costs, which until the passage of the Vocational Act of 1963, have been carried almost entirely by states and local communities? In terms of total cost per trainee, what percentage of this cost is direct and what percentage indirect? Are indirect costs 10%, 20% or 30% of total vocational educational costs? Although it is technically feasible to determine an accurate figure, it will not be attempted in this report. The purpose of this section of the analysis is only to suggest that in considering the costs of manpower training one has to consider not only the direct,

[1]*Education and Training, op. cit.,* p. 40.
[2]*Education and Training, op. cit.,* p. 41.

but also the indirect costs. As indicated above, in the past, indirect costs to MDTA have been borne entirely by states and local communities. Finally, for example, if it would be found that indirect costs averaged 20% of total direct costs, and we assume that state and local communities carry the entire indirect burden, then when we consider the relative cost support of Federal and state-local contribution to manpower training, state and local contributions would constitute 52% of the total costs, or:

		% Contribution	
		Federal	State
Total cost of manpower training	100%		
Indirect costs	20%		20%
Direct Cost	80%	48%	32%
Total Relative Contribution		48%	52%

Given the fact that total training costs must include direct and indirect costs, in order to explain the preceding calculation, assume that 20% of the total cost of training is indirect and that this is borne by states. It was previously established that states and local communities are currently contributing approximately 40% of the direct costs or 32% of total costs. Thus the total contribution of states and local communities would be about 52% or more than half the cost of training. This would meet the ultimate requirement of the Manpower Training Act which says that states should eventually contribute half the cost of training. Again, these figures are only approximate.

COST REQUIREMENT

In considering the relative cost burden between the Federal and state-local government of manpower training, one has to place the cost of the MDTA Program into the context of the total cost of occupational training, if a reasonable perspective of the relative equity of cost burden is to develop. Therefore, while it may be true in terms of occupational training performed under MDTA, that the Federal government has assumed a cost burden, if this is viewed in the context of total occupational training, however, states and local communities still bear the major costs.

Let us briefly review the question of the relative cost burden of occupational training in the United States, with particular emphasis on the Federal role. If one compared the total vocational effort of Federal versus state and local government, the situation would appear as follows: in 1964, there were approximately 4,386,000 students

receiving formal vocational education in high school and post high school. It is estimated that it costs approximately $500 per year to educate a vocational student in the New England area. Thus, the total cost of vocational education in 1964, to states and local communities, was approximately $2,193,000,000. In this same year, the total cost of MDTA was $148,132,000 or about 7% of the expenditures by states and local communities for vocational education. If one adds Federal funds contributed for vocational education in 1964, approximately $54.6 million, to that of MDTA, this total would still only amount to about 9% of state and local contribution to vocational education.

However, in considering the cost of vocational education, one must include not only governmental effort but private contribution as well, which would include that of private industry and private schools.

As for private industries' contribution, this can be deduced from a survey conducted by the Federal Reserve Bank of Boston of a representative sample of 210 New England manufacturing firms as to the nature and cost of their training programs.[1] In 1964, it was estimated that New England manufacturing firms expended approximately $70 million for training purposes or about one-eighth of their annual outlay for new plants and equipment. However, manufacturing employees represent about one quarter of the total work force, or of the total number of wage and salary earners in the country. One could reasonably double this cost figure to get a conservative estimate of private industry training costs or roughly $140 million a year. In 1965, approximately $17 million was appropriated for MDTA training in New England, or approximately 12% of private industry expenditures. Thus, private industry was expending approximately eight times more for training than the Federal government under MDTA in the New England area; or projecting the New England figures for the country as a whole, private industry was expending about $1.4 billion per year on training.

As for private commercial training schools, a survey conducted in 1963 by the Department of Labor indicated that next to high schools (and excluding colleges), such schools were the largest source of training[2] and provided about 19% of formal vocational training in the country as compared to 38% acquired in high schools. The cost, of course, is carried by the individual trainee himself. Having no figures as to the cost of this type of training, we shall assume that it provides

[1]See Estle, Edwin, F., "Industrial Investment in Manpower", *New England Business Review*, February, 1964.
[2]See *Manpower Report of the President*, 1964, *op. cit.*, pp. 66-72.

about half the formal training of high schools and that the cost per student is comparable. This would amount to half the cost of high school vocational training, or about $1 billion a year.

Totaling these approximations, we find:

Occupational training costs per year (1964) were:

Private Commercial Schools	$1.0 billion
Private Industry	1.4 billion
Federal Government (MDTA & Vo. Ed.)	.2 billion
State & Local Communities	2.1 billion
Total	$4.7 billion per year

The Federal government's contribution to the total cost of occupational training represented about 4.5%, or less than 5%. Although the above figures are gross approximations, they serve to indicate that the Federal government's contribution to total occupational training represents an extremely small percentage of the total training costs and that MDTA represents a relatively small effort in terms of total training effort and costs. Hence, if one would view the relative financial contributions to the total area of occupational training, rather than concentrate narrowly on the relative cost share of MDTA, one would only conclude that the Federal contribution is minimal. Instead of adopting a policy of state contribution to the MDTA program, the direction should be reversed. Greater Federal contribution should be made to MDTA to assist in a more comprehensive occupational training effort.

INDIVIDUAL EDUCATIONAL RETURN

Another dimension of the question of the relative cost of occupational training relates to the educational return which each taxpayer receives for his tax dollar. Assuming a relatively equal tax contribution for educational purposes, an equitable distribution of the tax dollar would mean that each family would receive the same amount of occupational education. One can at least hypothesize that the particular group with which the manpower program is concerned—the unskilled, unemployed, high school dropouts or culturally deprived—are not receiving an equitable educational return from their tax dollar which they must contribute to education. States and local communities provide the major source of educational revenue which in 1965 was esti-

mated to be about $25 billion per year.[1] Educational expenditures represent the largest single expenditure on the state and local level, or about 38% of their total expenditures.[2] Local communities are the largest single educational revenue source. In 1963 out of the total $23.2 billion expended on education by state and local communities, local communities contributed approximately $14 billion.[3] It has long been recognized that the method of taxation on the state and local levels tends to be regressive in nature. Property taxes, the primary educational tax on the local level; and sales and excise taxes on the state level; affect the lower income groups in a negatively disproportionate manner. Lower income groups tend to pay a higher proportion of their incomes in local and state taxes than do higher income groups. However, occupational training on the local level, and more particularly on the state level, tends to support those occupations in which children from higher income families tend to be found.

One can distinguish the difference between occupational training and general education. Occupational training quite obviously is geared to a particular occupation, and in terms of our educational system, such training occurs for the most part in vocational education, programs in high school, technical post high school, and at the college and graduate levels. Thus, on the vocational level we find training in the industrial arts, such as that for machinists; at post high school level, training in computer programming; at the college level, training in engineering or business administration; and at the graduate level, physicians, lawyers, social workers and college teachers are trained. Unfortunately, the groups of individuals with which MDTA is particularly concerned—the dropouts and the culturally deprived—for one reason or another are unable to take advantage of occupational training opportunities provided by the state and local communities. This is pronounced at the college level, where one finds children of higher income families in state universities. Unfortunately, this tends to be true also on the high school vocational level, because the availability of vocational education is quite limited. Vocational educators are able to and do select only the more capable, ambitious, and energetic students, and screen out the under-achievers, etc. Moreover, in the absence of special programs to assist students with records of low achievement, surveys indicate that even when they are able to get into vocational schools, they usually are unable to meet the standards of vocational training. Thus the President's *Manpower Power* of 1965 suggests that "only half of the nation's young people either enter college or graduate from high school with a substantial amount of

[1]U.S. Office of Education, quoted in *New York Times*, August 22, 1965.
[2]See *Manpower Report of President*, 1965, p. 79, Table 18.
[3]*Manpower Report, op. cit.*, p. 100.

occupational training."[1] Or, as currently conducted, the educational system up to the high school level provides occupational training for only half the student population. Yet all families pay taxes for occupational training. The lower income families who pay a disproportionate share of their income in the form of taxes for education, in comparison with higher income groups, receive little or no occupational training; while the higher income groups that pay less than a proportionate amount of taxes, receive a much larger proportion of the available occupational training. Thus, a strange paradox exists in that those groups which may require the greatest financial support in terms of occupational training, the culturally deprived and dropouts, are not only not receiving the occupational training for which their families are contributing with their tax dollar, but actually may be subsidizing the education of higher income families who are more able to contribute to their own training. Consequently, it would seem that the total tax structure and existing educational programs are functioning to perpetuate existing educational and, in turn, income differences in the population, which presumably we as a society are committed to correcting.

The current effort exemplified by MDTA to provide training opportunities for the most disadvantaged, at times, may have the connotation that these are special programs for specific groups of the population, for which the rest of the population has to pay; and as such there is an understandable reluctance to undertake programs that are large or costly. However, the preceding analysis would suggest that quite the opposite is the case. An educational system which requires everyone to pay taxes, but only provides occupational training for half the population, is clearly an inequitable arrangement. More extensive programs for the culturally deprived have to be developed before the lower income groups begin to receive an adequate training return for their tax dollar.

In terms of an equitable cost burden for individual taxpayers, at the very minimum, each taxpaying family should receive that amount of occupational training for which they have paid. One method whereby this might be achieved would be a drastic reorganization of occupational training in the educational establishment, wherein a much greater emphasis would be placed on occupational training for those who are not currently receiving it. This would require a massive extension in the high school and post high school years of programs similar to MDTA. Federally sponsored occupational training has demonstrated that such training must be geared to the ability, motivation, aspiration,

[1]See *Manpower Report of President, op. cit.*, p. 79-80, Tables 18 and 19.

and attitudes of the trainee. In other words, for whatever portion of the population that can profitably benefit from college training, college training should be provided; vocational opportunity should be allotted those that can benefit from the existing vocational programs, and so on. Thus, the educational system would have to incorporate into its offerings a set of occupational training programs geared to the needs of students who currently cannot take advantage of existing programs. The fact that the majority of students are not able to take advantage of college training does not mean that they should receive no training whatsoever.

There is little likelihood that on the state or local levels occupational training programs will be developed for those who are unable to take advantage of the existing opportunities. States which currently carry the primary financial burden of providing occupational training have difficulty financing their existing programs as illustrated by the rapidly expanding college population. Nor does it appear on the state level that the educational budget will be revamped in favor of the under-achiever. It is unlikely states will divert significant tax revenues, earmarked traditionally for higher education, to new occupational training programs for high school dropouts. An example of the state inability to finance this type of training, is the current attempt to get states to contribute more funds for MDTA training. As the President's *Manpower Report* of 1965 noted: "A further crisis is imminent, with one-third matching funds required under the 1963 amendments (to MDTA legislation) after June 30, 1965.

Only seven states have so far sanctioned participation in the MDTA program after that date; in late January, none had appropriated funds for this purpose. It is apparent that a majority of the states cannot meet the present matching requirement by July 1. Many governors have asked that the requirements be eased, citing rising demands on the states' revenues from other quarters—for example, to match increased Federal support of vocational education that is available under the Vocational Education Act of 1963.[1]

One of the unfortunate financial consequences of the educational establishment's failure to offer training programs for half the student population is that it is from this untrained population that individuals subsequently emerge who are most likely to be unemployed or be on welfare roles, and who, in turn, must be supported through tax revenue in the form of unemployment compensation and welfare payments.

[1]Manpower Report, *op. cit.*, pp. 130-139.

Such costs tend to be self-perpetuating. Thus, in a partial sense, because states do not provide adequate training facilities, they are subsequently burdened with costs of supporting the untrained.

It appears the only reasonable approach is to have the Federal government undertake the major burden of establishing occupational training for those who are not currently receiving it from the educational establishment, as has been started under such programs as MDTA. If the disadvantaged are to receive training at all, in all likelihood it will have to be provided by the Federal government. What seems to be emerging is a division of training effort between state and Federal government, in which the state will continue to provide occupational training, albeit expanded, for students with whom they have always been preoccupied—the upper income families—while the Federal government is to provide training for students from lower income families who are not currently being trained. In terms of tax dollars contributed by the taxpayer, this would be an equitable arrangement, in that in an indirect manner lower income families would finally be receiving some occupational training for their tax dollar.

The notion that states should contribute to the MDTA program would negate this division of educational effort, and unquestionably reduce training opportunities for those not receiving it. If states were required to produce matching funds for MDTA, as has been suggested, they would be unlikely to divert funds from other educational objectives. They have not done so in similar instances in the past. The end result would be a minimum outlay on the state level, which in turn would result in very limited training opportunities for the one-half untrained population.

If occupational training is to be provided for all, and if as currently seems to be the case, states are going to assume only half the burden, this means the Federal government will have to assume the other half. The nature of the Federal government's effort should then be 100% financing of such programs as MDTA and the expansion of such programs so that everyone in fact is given a true opportunity to acquire occupational training for which he is fitted—and for which he has paid.

THE TRAINING GAP

Because this analysis is concerned in general with some dimensions of the cost of occupational training and specifically with the financing of MDTA, the foregoing suggests that if one assembled data on all the various cost dimensions of training, rather than concentrated

initially on the relative financial burden of MDTA, Congress then would have available a national occupational training model constructed along econometric lines, so that Congress could simulate alternative policy proposals and realistically evaluate their respective consequences.

One would start initially with a projected cost of providing occupational training for all, assuming this is the national objective, and then fit MDTA into this general national training model. Only then would the question of relative financial burden be raised and be a reasonable consideration.

Such a training model would not be too difficult to construct. Fundamentally what has to be determined is the cost of training to meet employment requirements, for example, by 1975. One would have to estimate occupational employment trends, potential labor force, and the occupational training cost of converting the potential labor force to meet employment requirements. Given the expected projected budgets for occupational training on the Federal, state, and local level, and cost requirements to meet employment requirements in 1975, one would have the training gap, or what additional funds are necessary to meet national objectives. Only at this point could one ascertain the significance of MDTA and the direction in which the program should move. Hopefully, such a model would be able to predict the effects on Gross National Product, welfare costs, unemployment rates and costs, because of such a training gap (cost-benefit analysis). There is little question that a serious training gap currently exists and the reason is inadequate public investment in occupational training. As part of such a national training model, investment tax sources, Federal, state, private, etc., and the consequences of increases in their respective contribution, would also have to be included.

COST EFFECTIVENESS

Another cost aspect of the MDTA program relates to program effectiveness. Effectiveness is concerned with the product of the training program. Has the program produced a trainee who is employable or meets minimum employment requirements of the employer? If the end product of the program does not meet such requirements, then the program is not effective and the cost of training is a loss. Thus, for example, costs of training may be relatively high per trainee in a given project, although an effective product is being produced. One could have a lower cost program, but the trainee might not be employable; thus, one would receive nothing from the training investment.

Therefore, the question of costs cannot be divorced from that of program effectiveness.

One should distinguish between cost effectiveness and cost benefit. A cost-benefit analysis is concerned with the comparison of the cost of training with revenue return, either to the trainee, economy, or government as a consequence of such training, after the trainee becomes employed. Cost-effectiveness is concerned with whether or not the program is meeting its immediate training objective, a trained employee, and what the cost is to produce such a trained individual. Considerable attention has been devoted to the cost-benefit aspect of MDTA with the general conclusion that benefit return to the individual trainee, the economy, and the government, exceeds initial investment, and thus it is a sound investment.[1]

There appears to be an equal general concurrence on the part of Congress, private employers, trainees, and administrators of MDTA that the Manpower Training Program has been effective; that is, trainees have acquired employable skills, and this has been accomplished at a reasonable cost per trainee. What perhaps is not widely understood is why the program has been effective. While this report will not review the entire question of effectiveness, certain aspects will be considered as they have exhibited themselves in the New England region. The first aspect of effectiveness will relate to the key role MDTA has played in the administrative cooperation between school system, employer, and government. In order to understand this component, certain problems in vocational education should be noted.

Two general criticisms have been leveled at traditional vocational education as conducted for high school students (non-MDTA trainees): 1) the tendency to train students for occupations that are disappearing and not training for newer emerging occupations, and 2) training the student in skills, knowledge, machines, and materials that are technologically obsolete at the time of training. In either case, training is ineffective, because the product of the program is not employable and the investment in training is lost. In the first instance, the individual is being trained either for occupations that no longer exist, or for which labor demand is decreasing. In the second instance, although an occupational demand may exist, the trainee does not qualify because of inadequate or inappropriate training. An example of such a situa-

[1]See *Education and Training, op. cit.*, pp. 38-39, Bolino, August C., "Manpower Development: Charges and Challenges", *Michigan Business Review*, Ann Arbor, Michigan, July 1965, No. 4, pp. 36-37, and Somers, Gerald and Stromsdorfer, Ernst, "Benefit-Cost Analysis of Manpower Retraining," *Proceedings of the Seventeenth Annual Meeting*, Industrial Relation Research Association, 1964, pp. 172-185.

tion occurred in Keene, New Hampshire, an employment area which has a high demand for trained machinists. The local high school provided very limited machine shop training, but as was subsequently discovered, local employers either did not hire the graduates from such training or were reluctant to do so because they were not qualified.

Both of these criticisms should, of course, be qualified because considerable adaptation has occurred in vocational education. However, that these two problems should exist is completely understandable. Vocational education is, after all, part of the educational institution, and as such is divorced from the day-to-day changes in private industry. Educational interests of instructors and administrators tend to emerge within the educational establishment, and vocational teachers are no exception. Furthermore, these same general criticisms can be leveled at any part of the educational establishment that is concerned with occupational training. Thus, for example, at the college level, one can seriously question whether schools of business are properly preparing accountants, given the recent advances in the use of the computer and data processing. The same questions might be raised concerning engineering and education schools, etc. The fundamental problem is, of course, that as far as occupational training is concerned, there is insufficient liaison between the educational establishment from grade school to graduate school and private industry. Hence, the problem is not limited to vocational education.

The problem of training for inappropriate occupations has been recognized by Congress. The Vocational Act of 1963 provides, among other things, that vocational education programs be closely geared to changing manpower needs.[1] The 1965 *Manpower Report of the President* notes:

> "Specifically, the act (Vocational Education Act of 1963) requires that the state plans, which have to be submitted before a state can receive any new funds, must ensure periodic evaluation of vocational education programs in the light of current and projected manpower needs. The plan must also provide for cooperative arrangements with the public employment service system of the state, under which employment offices will make available to the vocational education agencies 'occupational information regarding reasonable prospects of employment in the community and elsewhere.'

[1]*Manpower Report of President*, 1965, *op. cit.*, p. 105.

> "In general, the agreements (between State Employment Offices and State Boards of Vocational Education) provide that the public employment service offices will supply the schools with information about job prospects in the local labor areas, so that training can be offered in occupations where workers are needed."

Thus with the assistance of the Public Employment Offices of the Labor Department, vocational educators will have guidance as to training needs.

However, the second major problem remains—that of ensuring that the student is acquiring the skills, understanding, and knowledge consistent with the technological requirements of industry. While the Labor Department can analyze changing employment and/or occupational trends, it cannot supply, nor is it required to supply, the necessary educational know-how to meet these changing occupational patterns. As new occupations come into existence and the skill content of existing ones change, if formal training is to be provided for these occupations, then new curriculums have to be devised, new equipment purchased, new training material acquired, qualified instructors provided, etc., if qualified trainees are to be produced. Ultimately only the employer has this information. It is he who establishes employment standards as to the qualifications a potential employee must have. It is the employer who determines the technology of the job; thus, only the employer knows, at least at the outset, what equipment to train on, curriculum content, skills to be acquired, and so forth. The obvious problem is how to transfer this information from the actual job to the training facility, and what mechanisms will most effectively accomplish this function. Because various MDTA mechanisms have been devised and used in New England which effectively meet this problem, these will be reviewed to indicate 1) why MDTA is effective, and 2) as a possible guide to other Federally sponsored training programs.

MDTA AS A BRIDGE BETWEEN INDUSTRY AND EDUCATION

The first mechanism that will be reviewed is administrative in nature, and relates to MDTA training which has been conducted in terms of the employment needs of the Electric Boat Division of General Dynamics Corporation, located at Groton, Connecticut. The Electric Boat Division is primarily involved in the construction of atomic submarines. Upon receipt of government contracts for such construction,

this company was faced with the problem of a manpower shortage. MDTA established a prevocational facility at Norwich, Connecticut, to meet these needs. After completion of MDTA training, the trainee reaches an employable stage, whereupon the company assumes the total burden of training. What is of interest is the administrative mechanism that was devised to facilitate this program.

The key element in providing effective coordination between the employer, vocational education facilities, and government has been the establishment in Norwich of a Manpower Coordinating Committee, which is composed of officials from the local State Employment Service Office, the Director of Vocational Education at the Norwich MDTA training facility, Coordinator from the state MDTA office, company officials, and union officials. This committee meets twice monthly at which time company and union officials outline for government officials their manpower needs. With appropriate investigation and approval on the part of the State Employment Office; company officials and the Vocational Education Director plan MDTA training projects in terms of the equipment required, training materials, and curriculum design, in consultation with the local MDTA official and State Employment Service officials. The training project is then submitted to the Regional and Washington MDTA Offices for approval. Because various projects are in the planning and execution stages, much of this work is carried on simultaneously. A close working relationship has grown not only between local government officials and company and union representatives, but between state and regional MDTA officials also, who frequently sit in on the meetings. As a result, problems that arise at any level—local, state, regional, or national can be handled quickly and knowledgeably, because all affected officials have insight as to the current and planned state of manpower training in the Norwich facility.

In order to explain why this has been an effective training effort, the specific contribution of the various individuals on the Committee should be noted. Company employment specialists first determine manpower requirements which are confirmed by the State Employment Service. The Employment Service also estimates the type of trainee that will be available for training and is responsible for providing the requisite number of trainees. It is at this point that cooperation between company and vocational education officials is critical. The training director and other company officials determine the training requirements in terms of the skills, background, etc. which the trainee has to have to perform in the occupation. Then, in consultation with vocational education officials, curricula are designed and hours to be

taught, material to be covered, training equipment, and teacher capability are determined. While the company best knows the technical content of the occupation, vocational education officials are expert at pedagogy or educational methodology. This administrative committee has available to it expert technological advice from company engineers and scientists who are equipped to advise on training content. What emerges is an acceptable, workable, technologically current training project. Trainees who complete the training project are qualified and hired by the company, although the company is under no obligation to do so. However, because of the close cooperation between government and industry officials, the latter are confident of the training program and trainees produced.

One occupational project carried out in this facility, health physics monitor, exemplifies in capsule form both the technological occupational problems faced and the manner in which they were met. Atomic energy as an energy source has given rise to new occupations, among them is health physics monitor, concerned primarily with the problems of radiation safety. These individuals check radiation hazards in all aspects of submarine construction, and also check sealed pipes for radiation. In addition, health physics monitors supervise both visitors and workmen in dangerous areas to ensure that safety regulations are observed, and that employees work only within safe time limits. The training for health physics monitors is sufficiently general so that such individuals are needed wherever atomic energy is used, as in hospitals and electrical energy utilities. For this occupation, vocational education officials had little or no idea as to the training requirements, which had to be supplied entirely by company officials. The program covered such topics as isotopes, electromagnetic radiation, ionization, and the biological effects of ionizing radiation. Approximately 200 trainees were trained in this occupation which five years ago did not exist.

This particular MDTA project illustrates that given sophisticated technological changes, with effective administrative cooperation between industry and government officials, it is feasible to move rapidly in training individuals in new and emerging occupations. Technological change need not be an economic or employment problem, if such a capability is widespread. However, in the absence of a program such as MDTA to provide a bridge between industry and education, we have newer occupations for which there are no trained employees, and unemployed workers who find their skills are obsolete.

Another aspect of the MDTA training effort at Norwich is the

attitude and policy of Electric Boat, which is to render to MDTA officials every possible assistance. The company has reproduced free training materials, temporarily loaned training equipment and material, and provided instructors from their own work force who met state educational requirements. There is little doubt that this commitment on the part of the company is a significant element in the success of these programs. The considerable amount of time spent by company and union officials in MDTA training projects has been offered free of charge.

Another impressive aspect of this operation is the speed with which the MDTA training center has been able to establish new training programs, so that the pressing manpower needs of industry could be met. Company officials, trainees, and MDTA officials have expressed their satisfaction with this aspect of the program. Unquestionably, having officials all work together has made this possible. Unfortunately, when the responsibility for developing new programs rests solely with the vocational education instructors who frequently have to work within the administrative restrictions and regulation of local and state school systems, it may take one to three years before an operational training program emerges, because all levels of school administration must give approval. The MDTA program in Norwich has been able to get new occupational training started in one to four months.

While the Norwich MDTA installation illustrates how effective administrative cooperation with industry can be achieved when the employer is relatively large and the corporation has an established training capability, how is this same cooperation to be obtained in the case of small employers? Again, MDTA has developed a mechanism both on the national and regional level to cope with this problem. Working relationships have been established between state vocational education, MDTA, and industry associations to carry out training. Private associations act as administrative agencies for small employers to execute training programs. For example, in cooperation with the Restaurant Association of New England, training programs have been established for cooks and chefs. The curriculum and training program was designed by state vocational education officials, and officials of the Restaurant Association, which in turn was approved by MDTA. This is an uninterrupted program because of the serious manpower shortage in this occupation. Continuous consultation has taken place between officers of the Association, vocational education administrators. and MDTA officials. Initial indications are that the small employer as represented through his association is quite satisfied with

this arrangement, principally because he had been unable to acquire trained personnel in the past.

Through MDTA initiative, a number of these programs have been established, as for example with the Auto Body Association of New England, Car Dealers Association of New England, New England Auto Parts Wholesalers, and the New England Appliance Repair Association. On the national level, similar arrangements have been made, such as with the National Association of Tool and Die Makers. For the small employer who has great difficulty conducting any training whatsoever, his association is the natural agency through which he can cooperate in training programs with government agencies.

Experience in New England suggests that there exists a vast reservoir of cooperation on the part of private industry, if they are given the opportunity to cooperate. All indications are that private employers and/or private associations are anxious to get together with education officials to assist in the training of students.

NEW OCCUPATIONS

It has been noted that, under MDTA, training has occurred in new occupations, or occupations for which there were no existing vocational education facilities, again an objective that Congress wants achieved. Perhaps what has not been fully demonstrated is the administrative initiative exercised by state and regional MDTA officials in establishing training programs for such occupations. Essentially, the problem is the same: how to bridge the gap between industry and education? Since, for the most part, the administrative procedure is similar for the majority of the projects, several of these will be briefly reviewed.

In one training project in Massachusetts, a demand for electronics solderer existed, a new occupation for which there were no training facilities in the local trade school. The state coordinator of MDTA called a meeting of the officials of the Philco Company and the vocational instructor from the local trade school. In a series of meetings, Philco officials drew up a curriculum and list of equipment required. With appropriate instruction at the Philco firm, the vocational instructor was able to carry out the project in the trade school successfully. As a result of such MDTA administration initiative, the trade school in Lexington, Massachusetts, is now able to offer a program in electronics soldering.

A program was established in a similar manner for the occupation of operator of glass-making machine in cooperation with Knox Glass in Connecticut. Custodial maintenance on a project in Hampden, Connecticut, was established in cooperation with the local maintenance industry in the community. Currently, discussions are under way to establish a program for doughnut cutters in Massachusetts. These are but a few examples of new occupations originated in the New England area, and demonstrate that training for new occupations, to which Congress is committed is feasible only with active participation of private industry.

Connecticut MDTA coordinators have established an administrative procedure of meeting with private employers to design new training programs that will meet their needs. The special form which follows was designed to secure necessary employer information:

"This form is suggested as a guide in helping to identify the specific needs of Industry, particularly as they are related to the Manpower Development and Training Act of 1962. It is important that all questions be answered as completely as possible so that maximum benefit may accrue to the trainee and the trainer.

1. NAME OF COMPANY .....
2. ADDRESS .....
3. NAME OF PERSON REQUESTING ASSISTANCE .....
4. TITLE OF PERSON REQUESTING ASSISTANCE .....
5. TYPE OF INDUSTRY (What do they make?) .....
6. TYPE OF JOB (What is this person to be trained for?) .....
7. OBJECTIVES:
   a. What should this person be able to do at the end of the program?
   b. What skills should he possess?
   c. How long should the program run? (Total Hours)

   .....

   .....

   .....
8. LIST THE SPECIFIC NEEDS OF THIS OCCUPATION IN TERMS OF
   a. Skills (Hours)
   b. Related knowledge (Mathematics & Blueprint Reading) (Hours)

   .....

   .....
9. WILL SPECIAL EQUIPMENT BE NEEDED TO DO THE JOB? .....
10. IS THIS EQUIPMENT AVAILABLE? ..... CAN IT BE RENTED OR PURCHASED? .....
    IF SO, WHERE? .....
11. ARE INSTRUCTORS AVAILABLE TO TEACH THIS TRADE? ..... CAN THEY BE OBTAINED ELSEWHERE ..... WILL INDUSTRY PROVIDE INSTRUCTORS? ..... WHAT TIMES WILL THEY BE AVAILABLE? .....

12. ARE TEXTBOOKS OR OTHER MATERIALS AVAILABLE THAT MIGHT BE OF ASSISTANCE? ..... WHERE OBTAINABLE? .....
13. IS SPACE AVAILABLE IN INDUSTRY OR NEARBY TO DO THE TRAINING? ..... CAN IT BE RENTED? ..... FROM WHOM? ..... AT WHAT TIME IS IT AVAILABLE? .....
14. OTHER SUGGESTIONS: Please list below:"

Once such information is gathered, state coordinators meet with state vocational education officials who know program planning to develop a program consistent with effective educational methodology. MDTA officials and vocational education officials believe that if they can get sufficient information from the employer, they can design a program. This is a highly creative and innovative process.

PUBLIC RELATIONS AND COMMUNITY LIAISON

Apart from establishing administrative mechanisms to mutually plan and execute training programs between education and industry, various liaison activities are conducted by MDTA officials to encourage these groups to work together. These activities lead to program effectiveness and also indicate private voluntary support.

For example, summer training conferences are conducted annually in Massachusetts for all vocational teachers, at which time experts from industry lecture and demonstrate to the teachers the latest methods, materials and equipment in the teachers' subject areas. Plant visitations are arranged. Such companies as General Electric, Philco, Norton, and Foxborough Electronics send engineers to these summer sessions to ensure that vocational teachers remain technologically current. This training is particularly germane when significant technological changes are occurring. For example, at a recent session, Cincinnati Milling Machine Company set up and demonstrated to vocational teachers numerical control machine tools, at company expense. The teachers are permitted to learn the use of this equipment during such sessions.

In Massachusetts, state occupational advisory committees made up of employers, advise on curriculum development and make certain that training is up-to-date.

In addition, MDTA regional and state officials actively encourage a closer relationship between education, industry, and others by means of public relations. For example, in Connecticut the state wrote a pamphlet describing MDTA that was mailed to libraries, guidance counselors, high school principals, school superintendents, employer

associations, and union officials. The pamphlet explained the nature of MDTA, its objectives, and how the program is carried out. Also, MDTA officials take every opportunity to explain MDTA to the community.

Given the opportunity, private industry would be quite willing to cooperate in establishing effective occupational training programs. Industry is interested in having well-trained employees. But procedures must be established to enable the utilization of private industrial cooperation.

The MDTA program indicates that unless administrative liaison is provided between industry and education, training effectiveness may be seriously jeopardized. MDTA has illustrated what can be done through the previously described administrative mechanisms. The Federal government is currently involved in a variety of occupational training programs, as set forth in the Equal Opportunity Act, Vocational Education Act of 1963, Higher Education Act, National Defense Act, etc. But unless an administrative bridge between education and industry is provided, the effectiveness of the training provided by this legislation may be questionable.

MDTA CONTRIBUTION TO LOCAL TRAINING EFFORT

A complete cost analysis of MDTA should include some discussion of Federal financial contribution to local training effort. Although the major burden of this analysis has emphasized local contribution to the Federal effort, this contribution has not been one-sided. The Federal government has made a significant contribution to local educational effort, not only through MDTA programs, but also by regular high school vocational training.

Under MDTA, in terms of direct financial contribution to state and local vocational programs, the Federal government is providing new equipment, repairing and servicing existing equipment, furnishing minor equipment and tools, and providing minor remodeling of school plant. Insofar as all of these items become part of the total vocational education operation and are available to students other than MDTA trainees, to that extent MDTA is contributing to local training effort. We might look at some of these cost items MDTA is contributing in more detail.

The largest cost item that MDTA is contributing relates to the purchase of new instructional equipment of a major and minor nature,

which approximates 28% of the MDTA training dollar. Given the fact that local training costs of MDTA have amounted to approximately $190 million in the three years of its operation (1963-1965), purchase of new equipment has amounted to 28% of this total or close to $53 million. The intent of Congress was quite clear in that it wanted such equipment to be made available for other and similar training programs conducted in the local communities. The Manpower Development and Training Act of 1962 as amended provides under Section 305(b) "Any equipment and teaching aids purchased by a state or local education agency with funds appropriated to carry out the provisions of part B shall become the property of the state." Hence, this equipment is now available to high school vocational trainees and adult training classes.

In addition, MDTA funds have been provided for the maintenance and repair of existing training equipment, which amounted to 1% of the total training dollar or $1.9 million for three years (1963-1965). While some of this maintenance dollar is used to maintain new equipment, a major part is being directed toward the upkeep of older, local equipment. Although the Manpower Act of 1962, as amended, expressly forbids the construction of a new plant, it does provide "for minor remodeling of a public building necessary to make it suitable for use in training under part B" Section 305, (C). For the most part, such remodeling relates to the installation of additional electrical lines to facilities, added equipment, or new courses that require increased electricity. Such costs were categorized under miscellaneous in the Education and Training Report of 1965, p. 251. According to this report, we can assume that these costs amounted to 3% of the total training costs or approximately $2.7 million (1963-1965). If these direct costs are totaled, new training equipment, maintenance, and remodeling would amount to 32% or one-third of the total MDTA training dollar, or approximately $58 million (1963-1965). This amount has become available to other than MDTA trainees. While this is a significant contribution, it should not be exaggerated, because in that same period, 1963-1965, local effort directed toward vocational training amounted to approximately $6.8 billion. From 1963 to 1965 about 13.7 million vocational students[1] were trained at a cost of $500 per year per student, which equals $6.8 billion. (The 13.7 million students may include the same individuals over a three-year period, but the cost per student per year is still $500.) Federal contribution amounted to less than 1% of the state contribution.

[1]*Education and Training, op. cit.*, p. 20.

It would, however, be a mistake to measure MDTA contribution to local effort entirely in financial terms. The most significant aspect of Federal government effort has been in its qualitative impact on local vocational training. By providing vocational instructors with an opportunity to purchase new equipment, they are enabled to furnish technically acceptable courses. MDTA projects are effective not only because they are specifically tailored to existing job opportunities, but because training courses are geared to the job requirements of the employer. Once employer requirements are established, the Federal government under MDTA is willing to provide the training capability to meet employer requirements: in the form of qualified instructors, training equipment, and material.

After reviewing the MDTA training projects in New England, one becomes aware of the severe handicaps under which vocational instructors are operating. In many instances vocational education has been completely under-financed on the local level. Given the shortage of funds, it would seem that local Boards of Education have denied expenditures for equipment and plant. The shortage of vocational plants has resulted in denying vocational training to many students who desire it. However, because equipment purchases are monetarily large and can be delayed; in many instances, Boards of Education have economized in this area. Current costs that must be met are the cost of instruction (salary) and instructional supplies. The local community has provided these funds. As a result, although a limited amount of vocational education is offered, frequently training is conducted with inadequate and obsolete training equipment. Thus, even though high school students are receiving training, their training in many instances is outmoded and they are not qualified when they finish school. Employers are reluctant to hire them. It then becomes clear that although local communities may be expending relatively large amounts of funds for vocational education, if, because of short-sighted economizing the trainee is not trained, major expenditures are being wasted and lost. With small additional payments, this large expenditure could be made worthwhile. This is the familiar cost-effectiveness problem.

It has been in the area of training equipment that MDTA has made its most significant contribution; the same area in which the local community has been most reluctant to expend funds.

The most striking example of the manner in which MDTA has upgraded vocational education, at least in the New England region, is known as the Machine Operator Project of Keene (New Hampshire).

Because this case illustrates some of the problems which have been reviewed in this analysis as to upgrading vocational education, as well as the manner in which MDTA has effectively resolved these problems, it will be reviewed in detail.

THE KEENE, NEW HAMPSHIRE, PROJECT[1]

The economic characteristics of the region will first be reviewed to indicate industry training needs:

The city of Keene, New Hampshire, is the county seat and principal center of population of Cheshire County. It is located in the southwestern corner of the state, a few miles from both the Massachusetts and Vermont borders. It has a population of 17,562 which represents a 12% increase since the census of 1950. It has a stable and diversified economy, producing precision ball bearings, machine tools, furniture, shoes, textiles, optical goods, toys, business forms and other manufactured products. It is the home of Keene State College and two large insurance firms. Estimated average manufacturing employment in the Keene local office area for 1962 (the latest date) was 8,419, and the average annual earnings in manufacturing for the same period was $4,088.

Skilled machine operators are in constant demand in the state and the supply is inadequate. The New Hampshire Technical Institutes in Manchester and Portsmouth are not equipped to turn out sufficient numbers of trained people to meet the demands placed on them. Plans are under way to relocate these two institutes and expand their capacity as well as to establish another one in the northern part of the state; however, graduates from these enlarged and new facilities are not expected to be available until 1967.

The Keene area has a substantial number of durable goods industries and is particularly heavy in the machining trades. Employment in the Keene Job Center in machinery is estimated at about 1,400. Products manufactured in this industry are machine tools, screws and bolts, working machines and ball bearings. "Most of the high schools of the state which offer courses in machine work do not produce graduates at the level anticipated in this project and employers are reluctant to hire them for that reason," the project report says in part. While a vocational program existed in the Keene High School, it was

[1]Much of the following information was taken directly from MDTA project, N.H. (R) 5004 Machine Operator General.

felt to be inadequate for industry purposes. Although the school principal and vocational instructor had been approached by state representatives to upgrade the program, they were not too interested; nor did the local Board of Education care to appropriate funds for such a program.

Some measure of the program that was being conducted in the local high school is indicated by its training equipment:

14 lathes — but no turret lathes
Milling machines
One universal head multiple speedhead
(1940)
Two #1½ horizontal mills (1916)
Two #2 horizontal mills (1903)

It is small wonder employers were reluctant to hire trainees who had received their training on a machine that had been constructed in 1903.

Jack Jordan, Executive Secretary of the Keene Industrial Foundation, a local employers' association, became interested in the training problem faced by employers. With the assistance of MDTA officials in consultation with industry officials, he designed a training program for machine operators. He then acquired community support for the project.

Organized labor is in favor of action which will enable more people to become gainfully employed and thus contribute to the economy of the state. Retraining to enable unemployed men and women to obtain jobs is an effective and practical way of building a qualified labor force.

The Keene Central Labor Union endorses your proposal and extends its best wishes for a successful program.

Willard Cheever
President, Keene Central Labor Council
Keene, New Hampshire

The basic course in machine operation as outlined by Mr. Jack Jordan of the Keene Industrial Foundation has much interest for the Keene Plant of the American Optical Company . . .

Roland F. Lyman
Personnel Director
American Optical Co.
Keene, New Hampshire

. . . After discussing the training program of basic machine operators with Mr. Jack Jordan of the Keene Regional Industrial Foundation, we feel that there is a definite need in Keene and at Markem for such a program . . .

Howard R. Clark
Personnel Manager
Markem Machine Co.
Keene, New Hampshire

With funds available from MDTA and industry support, Mr. Jordan was able to convince the Board of Education, school superintendent, principal and vocational instructor of Keene High School that the machine course was to be upgraded, and an MDTA project was instituted. Trainees are now being produced who for the first time meet employer standards, and they are being hired. The MDTA project engendered so much community interest in vocational education, that a Consolidated Vocational High School was subsequently built, to which the Industrial Foundation contributed $75,000.

The Keene situation in many respects is reflected in the country as a whole. Here was a community in which industry was unable to acquire qualified trainees, and where there were individuals who desired training. And yet, the local school board refused to appropriate funds to provide for this training. Moreover such training as had been provided was a waste of expenditures, because it was so totally inadequate that local industry refused to hire the trainees who graduated from the program.

MDTA not only provided funds to correct this situation, but acted as a bridge between industry and education. Further, MDTA funds in this project encouraged the community to construct a consolidated vocational high school. When considerable local initiative exists on the part of industry and union officials, MDTA funding is just the device needed to encourage the community into training activity. In the absence of such impetus as MDTA funds, the suggestion for expanded training frequently is met by the school board's response that funds are not available or that taxes will have to be raised. This frequently represents a rationalization for doing nothing. With MDTA funds available, this rationalization is not as easily employed. The community on its own initiative and with its own funds further extends vocational education.

While the vocational education establishment has been criticized for not moving into training for new occupations and not "keeping up

to date" (and based on the New England experience, there is some merit to these observations, as will subsquently be explored), it appears the basic cause of the absence of vocational education responsiveness to changing occupational requirements is that vocational education has been financially starved. Given the opportunity, which MDTA is currently providing, vocational instructors are quite capable of re-equipping their programs, and teaching new occupations. MDTA officials, particularly those familiar with local instructors and conditions, reviewed many instances of dedicated vocational teachers who year after year have continually pleaded with Boards of Education and school superintendents, for new training equipment, new training material, and more space, to no avail.

EDUCATIONAL INNOVATION

Apart from the direct financial contribution to total vocational training on the local level, MDTA has had other effects which should in the long run have beneficial results and lead to greater cost-effectiveness on the local level.

Perhaps the most important MDTA contribution to local educational effort has been its emphasis upon the importance of occupational training. Unfortunately, vocational education has historically not held a high position within the educational establishment. Apart from being financially starved, vocational schools in the past were not viewed as academically respectable and all too frequently as places to which problem students were to be sent. Vocational teachers were forced to act as custodians to the incorrigible, rather than as true teachers.

With the tremendous interest on the Federal level, teachers in the academic areas, school superintendents, and local school boards have been forced to take a new look at vocational education. With its emphasis on research and experimentation, professional educators on the university and state level have become actively involved in the problems of occupational training. Schools of education on the university level have undertaken many occupational research projects and have introduced courses in vocational training on the university level. As a result of this total involvement of the educational establishment in vocational problems, these problems are now received and considered with much more sympathy and regard. As a result, there is a strong feeling that greater progress has been made in vocational education within the last five to ten years than in its entire history.

Today vocational education is no longer the stepchild of the educational establishment, in which traditionally the major effort on the high school level has been directed at preparing students for college. To an increasing extent, the realization is growing that all students, whether they will go to college or not, should be given equal consideration. This means that vocational education must be supported because it is geared to those who are not going to college.

Another impact of MDTA relates to the length of training courses. MDTA training has demonstrated that the length of training program varies with the specific occupation. Skills for some occupations can be acquired in six weeks; others may take two years. This suggests training should be structured accordingly. Length of vocational training programs on the high school level tends to reflect the time sequence of the regular academic semester. Thus the possibility exists that on a semester basis, some programs may be too long, others too short. Currently some consideration is being given to length of courses for vocational students.

Another innovation by MDTA is that so-called academic subjects such as mathematics, reading, etc., for many culturally deprived students must be tailored to their occupational training. These students will learn academic subjects, if they realize such education is necessary to complete their occupational training. MDTA multi-occupational training programs have demonstrated the effectiveness of such an approach.

Another innovation by MDTA is the development of occupational training in terms of trainee abilities. Many trainees traditionally were not inherently able to learn rather technical skills, such as tool and die making, stenography, etc., offered in high schools. For example, in the New Haven, Connecticut Community Progress Project, CN(M) 5026, a group of hard-core unemployed were selected for training. Not only were they provided with basic skills but occupational training for which there existed an employment demand and which met the capabilities of trainees. Training projects for short-order cook, nurses' aide, duplicating machine operator, counter girl, and custodial maintenance worker were conducted. These were new occupations and were not being offered in the New Haven area. This project points out the necessity that training projects should not only meet the criterion that an employment demand exist, but programs must also meet the capability of the trainees.

Another significant MDTA contribution is that it demonstrated that training programs involving new occupations frequently can be devel-

oped in a short period of time to meet employer needs. There are two dimensions to this contribution, the time question and the need for a flexible operation. MDTA has effectively demonstrated that it is possible to develop a new course of training in one or two months. Traditionally within the educational establishment, it may have taken one or two years to develop a new course or curriculum.

A flexible operation requires changes in training programs. As the demand for one occupation declines and another increases, the training for the former has to decrease and the latter increase. MDTA has demonstrated the feasibility of starting up and phasing out training programs in a fairly rapid manner. In regular vocational training there is some concern that once programs are established, they will be continued regardless of occupational demand. For example, extensive training in certain localities has continued in agricultural occupations despite a decline in demand for such trainees.[1] In large measure, because of the MDTA experience, new vocational schools now being constructed in Massachusetts are required to have an unspecified area in its plans of from 5,000 to 10,000 square feet for changing occupational requirements. In this space, training programs will be moved in and out as need varies. Thus MDTA has demonstrated that it is feasible to develop "training capability that is flexible, plastic and responsive to changing employer requirements, and trainee abilities and needs." Further, it is possible to move rapidly in meeting these needs, because local vocational education personnel have been involved in these innovations, such as setting up new courses after only a short notice. This spirit of adaptability engendered by MDTA is beginning to permeate the entire vocational education establishment, and we may expect a much more plastic capability on the local level as time goes on.

Another contribution by MDTA is that because of its financing, it has permitted vocational instructors to experiment and utilize new teaching techniques and equipment, in order to improve their teaching effectiveness. Again, many such instructors who were aware of changes in educational pedagogy were unable to take advantage of such changes because of the limitation of funds. Thus, many MDTA projects provide for the purchase of such equipment as record players, listening corners, overhead projectors, tape recorders, combination controlled reader and tachistoscope, teacher's microphone, student listening stations, teacher monitor controls, audograph and transcription desks, dictaphone with microphone headsets, drafting machines, touch control stations, etc.

[1]See *Manpower Report of President, op. cit.*, p. 102.

Many vocational education and MDTA officials feel that in the long run, it may well be that the major contribution of MDTA will be its effect on the educational system. In this context, MDTA, in terms of the total training effort in this country, is a relatively small undertaking. But if vocational and adult education, which enrolled approximately 28 million adults in 1965, accept the innovations executed by MDTA, Manpower's impact will extend far outside its direct contribution of training the unemployed. In an educational context, the entire MDTA program can be viewed as experimental, designed to ascertain if the educational system in this country can respond effectively to a rapidly changing technology. MDTA has demonstrated it can be done; it is now up to the educational establishment, largely controlled and operated on the local level, to follow through on the work of MDTA.

MDTA innovation is not restricted to public schools. In project CN(J)-100, Electro-Mechanical Assembler, the Singer Sewing Machine Company of Bridgeport, Connecticut, had to phase out its sewing machine operation. With the support of MDTA, rather than terminating the jobs of nearly 200 employees in the 50-year age bracket and who had been in the employ of the company from 20 to 40 years, the company decided to retrain them for jobs in their electronic assembly division. This plan was subsequently carried out. Such a project suggests if effective total training is to occur, increased concern on the part of the Federal government has to be directed toward private industry training. It may well be that many of the training practices in industry are as inadequate and outmoded as those in the public education sector. MDTA should at least consider experimental and demonstration programs in the private industry sector to improve industrial training effectiveness. Little if any of the industry research dollar is directed at improved training.

SOME PROBLEMS

During the course of this investigation, several problems were raised as to occupational training, which are of importance concerning the further development of MDTA. Because these problems are general, this section can be considered as an appendix to the foregoing. For the most part, the problems are related to the necessity of more effective coordination between training programs and government agencies.

One persistent problem was raised concerning the future relationship between Manpower Development and Economic Opportunity effort. Francis Woods, Connecticut State Coordinator, has stated the problem of duplication so cogently that his remarks are quoted below:

"1. A Nurses' Aide program under MDTA has been approved by our Health Consultant, the Nursing Association, the Hospital Association and the Connecticut Convalescent Hospital Association. As a result of our deliberations, we have a curriculum which is agreeable to all concerned and which has produced well-trained competent Nurses' Aides.

At the same time under a grant from the office of Economic Opportunity, the City of New Britain is training Nurses' Aides based on a Curriculum which is entirely different from ours. It would appear that somewhere along the line there is a duplication of effort or a complete misunderstanding of what constitutes a Nurses' Aide.

2. Under MDTA we are conducting Custodial Maintenance programs in the major cities based upon a curriculum which has been worked out with experts in this field. This program has proved very successful particularly in the Hartford area. Yet, we understand that the Welfare Department is presently working out a training program for Custodians under a grant from the office of Economic Opportunity. We have also been informed that a similar program will be conducted by the Housing Division of the Department of Public Works. Apparently, here is another indication of duplication.

It is my feeling that wherever a need exists for specialized training those people who are best equipped to handle this should be consulted first and if they are unable or unwilling to carry out the training, then another agency could very well set up its own program. I do not believe this is being done at the present time and I am fearful that a great deal of time and effort will be wasted unless some sort of a supra coordinating committee at the operational level is established to review all such training proposals.

This is not to indicate that MDTA nor vocational education should be responsible for or operate all training programs. However, vocational education has been in operation in Connecticut for over fifty years and they do have

some knowledge in the training field. I feel certain there are other areas which would support my feeling and I honestly believe some effort should be made for a better overall coordination just as soon as possible."

Another set of problems related to effective coordination between the Department of Labor and the Department of Health, Education and Welfare. Because the local Office of Employment Security has to supply a specific number of qualified trainees 60 days after an MDTA project has been approved, it is essential that the requisite number be made available for training. Also there have been instances when the Labor Department has established related institutional training projects under OJT programs. All institutional training is under the direction of the Department of Health, Education and Welfare; consequently, administrative procedures are required to assure concurrence with this provision of the act. Moreover, since the Labor Department has the primary responsibility of follow up to ensure the proper placement of trainees, it is essential that such data be fed back to the MDTA officials of H.E.W., so that they can make the necessary improvements and corrections in training programs. As of now, feedback is grossly inadequate, and this handicaps effective corrective work by H.E.W. officials.

Several problems have arisen within H.E.W. itself concerning the MDTA operation. Administrative staffing on the regional and state level is grossly inadequate. For example, in Massachusetts four state MDTA officials are currently responsible for supervising approximately $11 million worth of training per year. It is extremely difficult for four men to perform as desired under these conditions. Further, while extensive contact and participation with industry has taken place, a great deal more is required. Additional staff is needed to actually get out into the field to ascertain employer training requirements, particularly with regard to designing new training programs. Many occupations exist in which there are manpower shortages, but no training capability for them. Also, as MDTA expands, the capacity of public vocational facilities is quickly reaching its limits. More public facilities will have to be provided, MDTA training centers established, or private facilities utilized. In any case, costs will probably rise, because the construction of new facilities and private training are relatively expensive.

Another area that requires more attention is the integration of experimental and demonstration projects with regular training activity. In the conduct of experimental work, it is important that project results be presented in as operational a form as possible, so that the research can be utilized by the regular program. If research results are vague

or ambiguous, or if the evaluations of experimental results are ineffective; the research is not useable. Also, research results should be made available to operating personnel, so they can improve their operations.

In terms of the variety of Federal legislation under which training can occur, there is some merit to introducing uniformity in the legislation. For example, MDTA legislation has certain requirements as to training control and effectiveness that are not present in the Economic Opportunity legislation. A major reason for MDTA effectiveness is vocational education know-how built into the program, and the existence of administrative controls. At present, the opportunity exists for inexperienced administrators to get involved in occupational training under O.E.O. legislation, which can result not only in duplication but in poor programs. Effective coordination between government programs are necessary to take advantage of existing know-how. If this does not happen, administrators may risk the same training mistakes made by vocational educators years ago.

In conclusion, increased attention in the future will have to be directed toward more effective coordination of the Federal government's efforts in the area of occupational training programs. This is not merely a question of the communication or information network between programs and agencies. Nor will it be solved by designing an improved information system, although this would help. On the state and local level, the various agencies are quite aware of what other agencies are doing. Rather, what is required is an integrated decision-making system in the occupational training area, to ensure that the total occupational training effort is effective. The government should receive an adequate return for every tax dollar invested in training. Individual administrators, working under a variety of programs and frequently at cross purposes, unquestionably dilute the Federal government's effort to achieve the worthy goal—the training of all individuals to their full capacity.